

*SJEDY* 5214. (new) A method of treating a coal formation in situ, comprising:

providing heat from one or more heat sources to at least a portion of the formation;

allowing the heat to transfer from the one or more heat sources to a part of the formation such that the heat from the one or more heat sources pyrolyzes at least a portion of hydrocarbon material within the part of the formation;

producing pyrolysis products from the formation;

heating a first portion of a formation with one or more heat sources to a temperature sufficient to allow generation of synthesis gas;

providing a first synthesis gas generating fluid to the first portion to generate a first synthesis gas;

removing a portion of the first synthesis gas from the formation;

heating a second portion of a formation with one more heat sources to a temperature sufficient to allow generation of synthesis gas having a H<sub>2</sub> to CO ratio greater than a H<sub>2</sub> to CO ratio of the first synthesis gas;

providing a second synthesis gas generating component to the second portion to generate a second synthesis gas;

removing a portion of the second synthesis gas from the formation; and

blending a portion of the first synthesis gas with a portion of the second synthesis gas to produce a blended synthesis gas having a selected H<sub>2</sub> to CO ratio.

*3* 5215. (new) The method of claim 5214, wherein the one or more heat sources comprise at least two heat sources, and wherein superposition of heat from at least the two heat sources pyrolyzes at least some hydrocarbons within the part of the formation.

*3* 5216. (new) The method of claim 5214, wherein the first synthesis gas generating fluid and second synthesis gas generating fluid comprise the same component.

*4* 5217. (new) The method of claim 5214, further comprising controlling the temperature in the first portion to control a composition of the first synthesis gas.

Sub 1) 5218. (new) The method of claim 5214, further comprising controlling the temperature in the second portion to control a composition of the second synthesis gas.

6 5219. (new) The method of claim 5214, wherein the selected ratio is controlled to be approximately 2:1 H<sub>2</sub> to CO.

7 5220. (new) The method of claim 5214, wherein the selected ratio is controlled to range from approximately 1.8:1 to approximately 2.2:1 H<sub>2</sub> to CO.

8 5221. (new) The method of claim 5214, wherein the selected ratio is controlled to be approximately 3:1 H<sub>2</sub> to CO.

9 5222. (new) The method of claim 5214, wherein the selected ratio is controlled to range from approximately 2.8:1 to approximately 3.2:1 H<sub>2</sub> to CO.

10 5223. (new) The method of claim 5214, further comprising providing at least a portion of the produced blended synthesis gas to a condensable hydrocarbon synthesis process to produce condensable hydrocarbons.

11 5224. (new) The method of claim 5223, wherein the condensable hydrocarbon synthesis process comprises a Fischer-Tropsch process.

12 5225. (new) The method of claim 5224, further comprising cracking at least a portion of the condensable hydrocarbons to form middle distillates.

13 5226. (new) The method of claim 5214, further comprising providing at least a portion of the produced blended synthesis gas to a catalytic methanation process to produce methane.

Sub 2) 5227. (new) The method of claim 5214, further comprising providing at least a portion of the produced blended synthesis gas to a methanol-synthesis process to produce methanol.

*Subj 2) 15*  
5228. (new) The method of claim 5214, further comprising providing at least a portion of the produced blended synthesis gas to a gasoline-synthesis process to produce gasoline.

*16*  
5229. (new) The method of claim 5214, wherein removing a portion of the second synthesis gas comprises withdrawing second synthesis gas through a production well, wherein a temperature of the production well adjacent to a second synthesis gas production zone is maintained at a substantially constant temperature configured to produce second synthesis gas having the H<sub>2</sub> to CO ratio greater than the first synthesis gas.

*D1*  
5230. (new) The method of claim 5214, wherein the first synthesis gas producing fluid comprises CO<sub>2</sub> and wherein the temperature of the first portion is at a temperature that will result in conversion of CO<sub>2</sub> and carbon from the first portion to CO to generate a CO rich first synthesis gas.

*Subj 18*  
5231. (new) The method of claim 5214, wherein the second synthesis gas producing fluid comprises water and hydrocarbons having carbon numbers less than 5, and wherein at least a portion of the hydrocarbons react within the formation to increase a H<sub>2</sub> concentration within the produced second synthesis gas.

*Subj 19*  
5232. (new) The method of claim 5214, wherein blending a portion of the first synthesis gas with a portion of the second synthesis gas comprises producing an intermediate mixture having a H<sub>2</sub> to CO mixture of less than the selected ratio, and subjecting the intermediate mixture to a shift reaction to reduce an amount of CO and increase an amount of H<sub>2</sub> to produce the selected ratio of H<sub>2</sub> to CO.

*Subj 20*  
5233. (new) The method of claim 5214, further comprising removing an excess of first synthesis gas from the first portion to have an excess of CO, subjecting the first synthesis gas to a shift reaction to reduce an amount of CO and increase an amount of H<sub>2</sub> before blending the first synthesis gas with the second synthesis gas.

5234. (new) The method of claim 5214, further comprising removing the first synthesis gas from the formation under pressure, and passing removed first synthesis gas through a turbine to generate electricity.

5235. (new) The method of claim 5214, further comprising removing the second synthesis gas from the formation under pressure, and passing removed second synthesis gas through a turbine to generate electricity.

5236. (new) The method of claim 5214, further comprising generating electricity from the blended synthesis gas using a fuel cell.

Sub54) 5237. (new) The method of claim 5214, further comprising generating electricity from the blended synthesis gas using a fuel cell, separating carbon dioxide from a fluid exiting the fuel cell, and storing a portion of the separated carbon dioxide within a spent portion of the formation.

5238. (new) The method of claim 5214, further comprising using at least a portion of the blended synthesis gas as a combustion fuel for heating the formation.

Sub55) 5239. (new) The method of claim 5214, further comprising allowing the heat to transfer from the one or more heat sources to the part of the formation to substantially uniformly increase a permeability of the part of the formation.

5240. (new) The method of claim 5214, further comprising controlling heat transfer from the one or more heat sources to produce a permeability within the part of the formation of greater than about 100 millidarcy.

5241. (new) The method of claim 5214, further comprising heating at least the portion of the part of the formation when providing the synthesis gas generating fluid to inhibit temperature decrease within the part of the formation during synthesis gas generation.

*Sabes* 39  
~~5242.~~ (new) The method of claim 5214, wherein the temperature sufficient to allow synthesis gas generation is within a range from approximately 400 °C to approximately 1200 °C.

*30*  
5243. (new) The method of claim 5214, wherein heating the first a portion of the part of the formation to a temperature sufficient to allow synthesis gas generation comprises:

heating zones adjacent to wellbores of one or more heat sources with heaters disposed in the wellbores, wherein the heaters are configured to raise temperatures of the zones to temperatures sufficient to support reaction of hydrocarbon material within the zones with an oxidizing fluid;

introducing the oxidizing fluid to the zones substantially by diffusion;

*D* 1 allowing the oxidizing fluid to react with at least a portion of the hydrocarbon material within the zones to produce heat in the zones; and

transferring heat from the zones to the part of the formation.

*31*  
5244. (new) The method of claim 5214, wherein heating the second portion of the part of the formation to a temperature sufficient to allow synthesis gas generation comprises:

heating zones adjacent to wellbores of one or more heat sources with heaters disposed in the wellbores, wherein the heaters are configured to raise temperatures of the zones to temperatures sufficient to support reaction of hydrocarbon material within the zones with an oxidizing fluid;

introducing the oxidizing fluid to the zones substantially by diffusion;

allowing the oxidizing fluid to react with at least a portion of the hydrocarbon material within the zones to produce heat in the zones; and

transferring heat from the zones to the part of the formation.

*32*  
5245. (new) The method of claim 5214, wherein heating the first portion of the part of the formation to a temperature sufficient to allow synthesis gas generation comprises:

introducing an oxidizing fluid into the formation through a wellbore;

*SbES7* transporting the oxidizing fluid substantially by convection into the first portion of the part of the formation, wherein the first portion of the part of the formation is at a temperature sufficient to support an oxidation reaction with the oxidizing fluid; and

reacting the oxidizing fluid within the first portion of the part of the formation to generate heat and raise the temperature of the first portion.

*D1* 5246. (new) The method of claim 5214, wherein heating the second portion of the part of the formation to a temperature sufficient to allow synthesis gas generation comprises:

introducing an oxidizing fluid into the formation through a wellbore;

transporting the oxidizing fluid substantially by convection into the second portion of the part of the formation, wherein the second portion of the part of the formation is at a temperature sufficient to support an oxidation reaction with the oxidizing fluid; and

reacting the oxidizing fluid within the second portion of the part of the formation to generate heat and raise the temperature of the second portion.

5247. (new) The method of claim 5214, wherein at least one of the one or more heat sources comprises an electrical heater disposed in the formation.

5248. (new) The method of claim 5214, wherein at least one of the one or more heat sources comprises a natural distributor combustor.

5249. (new) The method of claim 5214, wherein the one or more heat sources comprise one or more heater wells, wherein at least one heater well comprises a conduit disposed within the formation, and further comprising heating the conduit by flowing a hot fluid through the conduit.

5250. (new) The method of claim 5214, wherein heating the first portion of the part of the formation to a temperature sufficient to allow synthesis gas generation and providing a first synthesis gas generating fluid to the first portion of the part of the formation comprises introducing steam into the first portion.

*Subj 573* 38  
5251. (new) The method of claim 5214, wherein heating the second portion of the part of the formation to a temperature sufficient to allow synthesis gas generation and providing a second synthesis gas generating fluid to the second portion of the part of the formation comprises introducing steam into the second portion.

*39*  
5252. (new) The method of claim 5214, further comprising controlling the heating of the first portion of part of the formation and provision of the first synthesis gas generating fluid to maintain a temperature within the first portion of the part of the formation above the temperature sufficient to generate synthesis gas.

*40*  
5253. (new) The method of claim 5214, further comprising controlling the heating of the second portion of part of the formation and provision of the second synthesis gas generating fluid to maintain a temperature within the second portion of the part of the formation above the temperature sufficient to generate synthesis gas.

*41*  
5254. (new) The method of claim 5214, wherein the first synthesis gas generating fluid comprises liquid water.

*42*  
5255. (new) The method of claim 5214, wherein the second synthesis gas generating fluid comprises liquid water.

*43*  
5256. (new) The method of claim 5214, wherein the first synthesis gas generating fluid comprises steam.

*44*  
5257. (new) The method of claim 5214, wherein the second synthesis gas generating fluid comprises steam.

*45*  
5258. (new) The method of claim 5214, wherein the first synthesis gas generating fluid comprises water and carbon dioxide, wherein the carbon dioxide inhibits production of carbon dioxide from the part of the formation.

*Sub67* 46 45  
5259. (new) The method of claim 5258, wherein a portion of the carbon dioxide within the first synthesis gas generating fluid comprises carbon dioxide removed from the formation.

*Sub7* 47 49  
5260. (new) The method of claim 5214, wherein the second synthesis gas generating fluid comprises water and carbon dioxide, wherein the carbon dioxide inhibits production of carbon dioxide from the part of the formation.

*Sub7* 48 47  
5261. (new) The method of claim 5260, wherein a portion of the carbon dioxide within the second synthesis gas generating fluid comprises carbon dioxide removed from the formation.

*D1* 49 49  
5262. (new) The method of claim 5214, wherein the first synthesis gas generating fluid comprises carbon dioxide, and wherein a portion of the carbon dioxide reacts with carbon in the formation to generate carbon monoxide.

*Sub67* 50 49  
5263. (new) The method of claim 5262, wherein a portion of the carbon dioxide within the first synthesis gas generating fluid comprises carbon dioxide removed from the formation.

51 51  
5264. (new) The method of claim 5214, wherein the second synthesis gas generating fluid comprises carbon dioxide, and wherein a portion of the carbon dioxide reacts with carbon in the formation to generate carbon monoxide.

*Sub67* 52 51  
5265. (new) The method of claim 5264, wherein a portion of the carbon dioxide within the second synthesis gas generating fluid comprises carbon dioxide removed from the formation.

53 53  
5266. (new) The method of claim 5214, wherein providing the first synthesis gas generating fluid to the first portion of the part of the formation comprises raising a water table of the formation to allow water to flow into the first portion of the part of the formation.

*Sub E97* 54  
5267. (new) The method of claim 5214, wherein providing the second synthesis gas generating fluid to the second portion of the part of the formation comprises raising a water table of the formation to allow water to flow into the second portion of the part of the formation.

*55*  
5268. (new) The method of claim 5214, wherein the first synthesis gas generating fluid comprises water and hydrocarbons having carbon numbers less than 5, and wherein at least a portion of the hydrocarbons are subjected to a reaction within the first portion of the part of the formation to increase a H<sub>2</sub> concentration within the produced first synthesis gas.

*56*  
5269. (new) The method of claim 5214, wherein the second synthesis gas generating fluid comprises water and hydrocarbons having carbon numbers less than 5, and wherein at least a portion of the hydrocarbons are subjected to a reaction within the second portion of the part of the formation to increase a H<sub>2</sub> concentration within the produced second synthesis gas.

*Sub E10* 57  
5270. (new) The method of claim 5214, wherein the first synthesis gas generating fluid comprises water and hydrocarbons having carbon numbers greater than 4, and wherein at least a portion of the hydrocarbons react within the first portion of the part of the formation to increase an energy content of the produced first synthesis gas.

*58*  
5271. (new) The method of claim 5214, wherein the second synthesis gas generating fluid comprises water and hydrocarbons having carbon numbers greater than 4, and wherein at least a portion of the hydrocarbons react within at least the second portion of the part of the formation to increase an energy content of the second produced synthesis gas.

*59*  
5272. (new) The method of claim 5214, further comprising maintaining a pressure within the formation during synthesis gas generation, and passing produced blended synthesis gas through a turbine to generate electricity.

*60*  
5273. (new) The method of claim 5214, further comprising generating electricity from the blended synthesis gas using a fuel cell.

~~61~~ 5274. (new) The method of claim 5214, further comprising generating electricity from the blended synthesis gas using a fuel cell, separating carbon dioxide from a fluid exiting the fuel cell, and storing a portion of the separated carbon dioxide within a spent section of the formation.

~~62~~ 5275. (new) The method of claim 5214, further comprising using a portion of the blended synthesis gas as a combustion fuel for the one or more heat sources.

~~63~~ 5276. (new) The method of claim 5214, further comprising using a portion of the first synthesis gas as a combustion fuel for the one or more heat sources.

~~64~~ 5277. (new) The method of claim 5214, further comprising using a portion of the second synthesis gas as a combustion fuel for the one or more heat sources.

~~65~~ 5278. (new) The method of claim 5214, further comprising using a portion of the blended synthesis gas as a combustion fuel for the one or more heat sources.

~~66~~ 5279. (new) A method of treating a coal formation in situ, comprising:  
providing heat from one or more heaters to at least a portion of the formation;  
allowing the heat to transfer from the one or more heaters to a part of the formation such that the heat from the one or more heaters pyrolyzes at least a portion of hydrocarbon material within the part of the formation;

producing pyrolysis products from the formation;  
heating a first portion of a formation with one or more heaters to a temperature sufficient to allow generation of synthesis gas;

providing a first synthesis gas generating fluid to the first portion to generate a first synthesis gas;

~~removing a portion of the first synthesis gas from the formation;~~

*Sub 51 >* ~~heating a second portion of a formation with one or more heaters to a temperature sufficient to allow generation of synthesis gas having a H<sub>2</sub> to CO ratio greater than a H<sub>2</sub> to CO ratio of the first synthesis gas;~~

providing a second synthesis gas generating component to the second portion to generate a second synthesis gas;

removing a portion of the second synthesis gas from the formation; and

blending a portion of the first synthesis gas with a portion of the second synthesis gas to produce a blended synthesis gas having a selected H<sub>2</sub> to CO ratio.

*67*  
5280. (new) The method of claim 5279, wherein the one or more heaters comprise at least two heaters, and wherein superposition of heat from at least the two heaters pyrolyzes at least some hydrocarbons within the part of the formation.

*68*  
5281. (new) The method of claim 5279, wherein the first synthesis gas generating fluid and second synthesis gas generating fluid comprise the same component.

*69*  
5282. (new) The method of claim 5279, further comprising controlling the temperature in the first portion to control a composition of the first synthesis gas.

*70*  
5283. (new) The method of claim 5279, further comprising controlling the temperature in the second portion to control a composition of the second synthesis gas.

*71*  
5284. (new) The method of claim 5279, wherein the selected ratio is controlled to be approximately 2:1 H<sub>2</sub> to CO.

*72*  
5285. (new) The method of claim 5279, wherein the selected ratio is controlled to range from approximately 1.8:1 to approximately 2.2:1 H<sub>2</sub> to CO.

*73*  
5286. (new) The method of claim 5279, wherein the selected ratio is controlled to be approximately 3:1 H<sub>2</sub> to CO.

~~74~~ 5287. (new) The method of claim ~~5279~~, wherein the selected ratio is controlled to range from approximately 2.8:1 to approximately 3.2:1 H<sub>2</sub> to CO.

~~75~~ 5288. (new) The method of claim ~~5279~~, further comprising providing at least a portion of the produced blended synthesis gas to a condensable hydrocarbon synthesis process to produce condensable hydrocarbons.

~~76~~ 5289. (new) The method of claim ~~5288~~, wherein the condensable hydrocarbon synthesis process comprises a Fischer-Tropsch process.

~~77~~ 5290. (new) The method of claim ~~5279~~, further comprising cracking at least a portion of the condensable hydrocarbons to form middle distillates.

~~78~~ 5291. (new) The method of claim ~~5279~~, further comprising providing at least a portion of the produced blended synthesis gas to a catalytic methanation process to produce methane.

~~79~~ 5292. (new) The method of claim ~~5279~~, further comprising providing at least a portion of the produced blended synthesis gas to a methanol-synthesis process to produce methanol.

~~80~~ 5293. (new) The method of claim ~~5279~~, further comprising providing at least a portion of the produced blended synthesis gas to a gasoline-synthesis process to produce gasoline.

~~81~~ 5294. (new) ~~The method of claim 5279, wherein removing a portion of the second synthesis gas comprises withdrawing second synthesis gas through a production well, wherein a temperature of the production well adjacent to a second synthesis gas production zone is maintained at a substantially constant temperature configured to produce second synthesis gas having the H<sub>2</sub> to CO ratio greater than the first synthesis gas.~~

~~Ske 127~~ 82 ~~66~~  
5295. (new) The method of claim 5279, wherein the first synthesis gas producing fluid comprises CO<sub>2</sub> and wherein the temperature of the first portion is at a temperature that will result in conversion of CO<sub>2</sub> and carbon from the first portion to CO to generate a CO rich first synthesis gas.

~~83~~ ~~66~~  
5296. (new) The method of claim 5279, wherein the second synthesis gas producing fluid comprises water and hydrocarbons having carbon numbers less than 5, and wherein at least a portion of the hydrocarbons react within the formation to increase a H<sub>2</sub> concentration within the produced second synthesis gas.

~~84~~ ~~66~~  
5297. (new) The method of claim 5279, wherein blending a portion of the first synthesis gas with a portion of the second synthesis gas comprises producing an intermediate mixture having a H<sub>2</sub> to CO mixture of less than the selected ratio, and subjecting the intermediate mixture to a shift reaction to reduce an amount of CO and increase an amount of H<sub>2</sub> to produce the selected ratio of H<sub>2</sub> to CO.

~~Ske 137~~ 85 ~~66~~  
5298. (new) The method of claim 5279, further comprising removing an excess of first synthesis gas from the first portion to have an excess of CO, subjecting the first synthesis gas to a shift reaction to reduce an amount of CO and increase an amount of H<sub>2</sub> before blending the first synthesis gas with the second synthesis gas.

~~86~~ ~~66~~  
5299. (new) The method of claim 5279, further comprising removing the first synthesis gas from the formation under pressure, and passing removed first synthesis gas through a turbine to generate electricity.

~~87~~ ~~66~~  
5300. (new) The method of claim 5279, further comprising removing the second synthesis gas from the formation under pressure, and passing removed second synthesis gas through a turbine to generate electricity.

~~64 5301.~~ (new) The method of claim ~~5279~~, further comprising generating electricity from the blended synthesis gas using a fuel cell.

~~Sub 147 89~~ ~~5302.~~ (new) The method of claim ~~5279~~, further comprising generating electricity from the blended synthesis gas using a fuel cell, separating carbon dioxide from a fluid exiting the fuel cell, and storing a portion of the separated carbon dioxide within a spent portion of the formation.

~~68 90~~ ~~5303.~~ (new) The method of claim ~~5279~~, further comprising using at least a portion of the blended synthesis gas as a combustion fuel for heating the formation.

~~Sub 157 91~~ ~~5304.~~ (new) The method of claim ~~5279~~, further comprising allowing the heat to transfer from the one or more heaters to the part of the formation to substantially uniformly increase a permeability of the part of the formation.

~~D1 92~~ ~~5305.~~ (new) The method of claim ~~5279~~, further comprising controlling heat transfer from the one or more heaters to produce a permeability within the part of the formation of greater than about 100 millidarcy.

~~93~~ ~~5306.~~ (new) The method of claim ~~5279~~, further comprising heating at least the portion of the part of the formation when providing the synthesis gas generating fluid to inhibit temperature decrease within the part of the formation during synthesis gas generation.

~~94~~ ~~5307.~~ (new) The method of claim ~~5279~~, wherein the temperature sufficient to allow synthesis gas generation is within a range from approximately 400 °C to approximately 1200 °C.

~~95~~ ~~5308.~~ (new) The method of claim ~~5279~~, wherein heating the first a portion of the part of the formation to a temperature sufficient to allow synthesis gas generation comprises:

heating zones adjacent to wellbores of one or more heaters with heaters disposed in the wellbores, wherein the heaters are configured to raise temperatures of the zones to temperatures sufficient to support reaction of hydrocarbon material within the zones with an oxidizing fluid;

*Sub 5157* introducing the oxidizing fluid to the zones substantially by diffusion;  
allowing the oxidizing fluid to react with at least a portion of the hydrocarbon material  
within the zones to produce heat in the zones; and  
transferring heat from the zones to the part of the formation.

*96* *66*  
5309. (new) The method of claim 5279, wherein heating the second portion of the part of the  
formation to a temperature sufficient to allow synthesis gas generation comprises:

heating zones adjacent to wellbores of one or more heaters with heaters disposed in the  
wellbores, wherein the heaters are configured to raise temperatures of the zones to temperatures  
sufficient to support reaction of hydrocarbon material within the zones with an oxidizing fluid;  
introducing the oxidizing fluid to the zones substantially by diffusion;  
allowing the oxidizing fluid to react with at least a portion of the hydrocarbon material  
within the zones to produce heat in the zones; and  
transferring heat from the zones to the part of the formation.

*97* *66*  
5310. (new) The method of claim 5279, wherein heating the first portion of the part of the  
formation to a temperature sufficient to allow synthesis gas generation comprises:

introducing an oxidizing fluid into the formation through a wellbore;  
transporting the oxidizing fluid substantially by convection into the first portion of the  
part of the formation, wherein the first portion of the part of the formation is at a temperature  
sufficient to support an oxidation reaction with the oxidizing fluid; and  
reacting the oxidizing fluid within the first portion of the part of the formation to generate  
heat and raise the temperature of the first portion.

*99* *66*  
5311. (new) The method of claim 5279, wherein heating the second portion of the part of the  
formation to a temperature sufficient to allow synthesis gas generation comprises:

introducing an oxidizing fluid into the formation through a wellbore;  
transporting the oxidizing fluid substantially by convection into the second portion of the  
part of the formation, wherein the second portion of the part of the formation is at a temperature  
sufficient to support an oxidation reaction with the oxidizing fluid; and

Sub E157 reacting the oxidizing fluid within the second portion of the part of the formation to generate heat and raise the temperature of the second portion.

99 5312. (new) The method of claim 5279, wherein at least one of the one or more heaters comprises an electrical heater disposed in the formation.

100 5313. (new) The method of claim 5279, wherein at least one of the one or more heaters comprises a natural distributor combustor.

101 5314. (new) The method of claim 5279, wherein the one or more heaters comprise one or more heater wells, wherein at least one heater well comprises a conduit disposed within the formation, and further comprising heating the conduit by flowing a hot fluid through the conduit.

102 5315. (new) The method of claim 5279, wherein heating the first portion of the part of the formation to a temperature sufficient to allow synthesis gas generation and providing a first synthesis gas generating fluid to the first portion of the part of the formation comprises introducing steam into the first portion.

103 5316. (new) The method of claim 5279, wherein heating the second portion of the part of the formation to a temperature sufficient to allow synthesis gas generation and providing a second synthesis gas generating fluid to the second portion of the part of the formation comprises introducing steam into the second portion.

104 5317. (new) The method of claim 5279, further comprising controlling the heating of the first portion of part of the formation and provision of the first synthesis gas generating fluid to maintain a temperature within the first portion of the part of the formation above the temperature sufficient to generate synthesis gas.

105 5318. (new) The method of claim 5279, further comprising controlling the heating of the second portion of part of the formation and provision of the second synthesis gas generating fluid

Sub E15 to maintain a temperature within the second portion of the part of the formation above the temperature sufficient to generate synthesis gas.

~~102-106~~ 5319. (new) The method of claim ~~5219~~, wherein the first synthesis gas generating fluid comprises liquid water.

~~103-107~~ 5320. (new) The method of claim ~~5219~~, wherein the second synthesis gas generating fluid comprises liquid water.

~~104-108~~ 5321. (new) The method of claim ~~5219~~, wherein the first synthesis gas generating fluid comprises steam.

~~105-109~~ 5322. (new) The method of claim ~~5219~~, wherein the second synthesis gas generating fluid comprises steam.

~~106-110~~ 5323. (new) The method of claim ~~5219~~, wherein the first synthesis gas generating fluid comprises water and carbon dioxide, wherein the carbon dioxide inhibits production of carbon dioxide from the part of the formation.

Sub E17-111 5324. (new) The method of claim ~~5323~~, wherein a portion of the carbon dioxide within the first synthesis gas generating fluid comprises carbon dioxide removed from the formation.

~~109-112~~ 5325. (new) The method of claim ~~5219~~, wherein the second synthesis gas generating fluid comprises water and carbon dioxide, wherein the carbon dioxide inhibits production of carbon dioxide from the part of the formation.

Sub E17 ~~113~~ 5326. (new) The method of claim ~~5325~~, wherein a portion of the carbon dioxide within the second synthesis gas generating fluid comprises carbon dioxide removed from the formation.

110 ~~114~~ 5327. (new) The method of claim 5279, wherein the first synthesis gas generating fluid comprises carbon dioxide, and wherein a portion of the carbon dioxide reacts with carbon in the formation to generate carbon monoxide.

~~Sub 187~~ 115 5328. (new) The method of claim 5327, wherein a portion of the carbon dioxide within the first synthesis gas generating fluid comprises carbon dioxide removed from the formation.

112 ~~116~~ 5329. (new) The method of claim 5279, wherein the second synthesis gas generating fluid comprises carbon dioxide, and wherein a portion of the carbon dioxide reacts with carbon in the formation to generate carbon monoxide.

~~Sub 19~~ 117 5330. (new) The method of claim 5329, wherein a portion of the carbon dioxide within the second synthesis gas generating fluid comprises carbon dioxide removed from the formation.

D 118 5331. (new) The method of claim 5279, wherein providing the first synthesis gas generating fluid to the first portion of the part of the formation comprises raising a water table of the formation to allow water to flow into the first portion of the part of the formation.

119 120 5332. (new) The method of claim 5279, wherein providing the second synthesis gas generating fluid to the second portion of the part of the formation comprises raising a water table of the formation to allow water to flow into the second portion of the part of the formation.

120 121 5333. (new) The method of claim 5279, wherein the first synthesis gas generating fluid comprises water and hydrocarbons having carbon numbers less than 5, and wherein at least a portion of the hydrocarbons are subjected to a reaction within the first portion of the part of the formation to increase a H<sub>2</sub> concentration within the produced first synthesis gas.

121 122 5334. (new) The method of claim 5279, wherein the second synthesis gas generating fluid comprises water and hydrocarbons having carbon numbers less than 5, and wherein at least a

portion of the hydrocarbons are subjected to a reaction within the second portion of the part of the formation to increase a H<sub>2</sub> concentration within the produced second synthesis gas.

~~Sub 5207~~ 535. (new) The method of claim 5279, wherein the first synthesis gas generating fluid comprises water and hydrocarbons having carbon numbers greater than 4, and wherein at least a portion of the hydrocarbons react within the first portion of the part of the formation to increase an energy content of the produced first synthesis gas.

~~Sub 5207~~ 536. (new) The method of claim 5279, wherein the second synthesis gas generating fluid comprises water and hydrocarbons having carbon numbers greater than 4, and wherein at least a portion of the hydrocarbons react within at least the second portion of the part of the formation to increase an energy content of the second produced synthesis gas.

~~Sub 5207~~ 537. (new) The method of claim 5279, further comprising maintaining a pressure within the formation during synthesis gas generation, and passing produced blended synthesis gas through a turbine to generate electricity.

~~Sub 5207~~ 538. (new) The method of claim 5279, further comprising generating electricity from the blended synthesis gas using a fuel cell.

~~Sub 5207~~ 539. (new) The method of claim 5279, further comprising generating electricity from the blended synthesis gas using a fuel cell, separating carbon dioxide from a fluid exiting the fuel cell, and storing a portion of the separated carbon dioxide within a spent section of the formation.

~~Sub 5207~~ 540. (new) The method of claim 5279, further comprising using a portion of the blended synthesis gas as a combustion fuel for the one or more heaters.

~~Sub 5207~~ 541. (new) The method of claim 5279, further comprising using a portion of the first synthesis gas as a combustion fuel for the one or more heaters.

*Sub 21 129* 66  
~~5214~~ 5342. (new) The method of claim ~~5219~~, further comprising using a portion of the second synthesis gas as a combustion fuel for the one or more heaters.

*D 122 130* 62 66  
~~5214~~ 5343. (new) The method of claim ~~5219~~, further comprising using a portion of the blended synthesis gas as a combustion fuel for the one or more heaters.

### Response To Office Action Mailed December 2, 2002

#### A. Pending Claims

Claims 5214-5343 are currently pending. Claims 4764-4835 and 5150-5213 have been cancelled without prejudice. Claims 5214-5343 are new.

#### B. Restriction

On page 2 of the Office Action the Examiner noted:

The reply filed on October 15, 2002 is not fully responsive to the prior Office Action because of the following omission(s) or matter(s):

The amendment fails to respond to the Office action mailed on September 23, 2002 (Paper No. 15), in which the first invention, i.e., Group I claims to 4699-4763 was elected via telephone restriction on September 11, 2002 (see page 2, Para 1) in said previous Office action....

Accordingly, in response to this action, applicant should cancel all the claims pending/present in their Amendment filed on October 15, 2002 (Paper No. 17), which correspond to claims previously non-elected during the said September 11, 2002 election, and resubmit claims 4699-4763 as amended(?), as *new* claims, insofar as claims 4699-4763 can't be "uncancelled", along with any additional new claims desired.

Applicant affirms the election of Group I claims by canceling previously elected claims 4764-4835 and 5150-5213 and adding new claims 5214-5343 (originating from claims 4699-4763), drawn to a method of heating a first and second portion of a coal formation to a temperature sufficient to generate synthesis gas, producing a first and second synthesis gas, which are blended

together to provide a blended synthesis gas having a selected H<sub>2</sub> to CO ratio, without traverse. Applicant believes that all pending claims are directed to the elected invention. Applicant reserves the right to file divisional applications capturing the subject matter of the non-elected species.

C. **Conclusion**

Applicant believes that no fees are due in association with the filing of this document. If any extension of time is required, Applicant hereby requests the appropriate extension of time. If any fees are required, please charge those fees to Conley, Rose & Tayon, P.C. Deposit Account Number 50-1505/5659-07400/EBM.

Respectfully submitted,



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